

# A New Aërial Smoke Barrage

THE airplane has surely come into its own during the recent world war. Hundreds of 'planes were to be seen in the air on various sections of the great battle-front many times during the day, their glistening wings sparkling in the bright sunshine. Pursuer and pursued hurtled thru the air at prodigious speeds. These airplane attacks looked all very tame from the ground until one of them closed in on his adversary, when many a spectacular battle was enacted. Perhaps one of the most spectacular of all aërial battles is that mentioned in a number of the interesting stories that have come to us from the lion-hearted fighters of the air, where an enemy 'plane has dropt out of a cloud, in order to pounce down and surprise an unsuspecting flier below. Some of the German aviators used to practise this trick regularly, sailing upward thousands of feet, only to suddenly disappear in a cloud or cloud bank. Then the crafty flier would suddenly dart out of a cloud at the side or at the bottom, and if a hostile 'plane happened to be anywhere in the vicinity, the factor of surprise would in practically all cases be on the side of the emerging war-'plane.

But clouds would not always be conveniently at hand for carrying on such maneuvers. There is not now, nor is there likely to be an international law on the conduct of aërial warfare to the effect that battle 'planes may not play hide and seek among the clouds if they choose to. Wherefore and hence, we have the latest invention in aërial warfare—the "airplane smoke producer"—the particular form of this invention here

illustrated and described being due to John Koltko, of Watertown, Connecticut.

As the front cover and accompanying views show, this invention enables an aviator to quickly send out a large quantity of heavy smoke which will entirely envelop the 'plane and prevent, or at least make it ex-

the air, but it would in a few minutes produce a long trailing cloud of black smoke, and it would indeed be quite difficult for an aviator to tell at exactly what point in this cloud the enemy 'plane was.

The technical details of this smoke-producing apparatus for aircraft are quite simple and it operates as follows: A steel tank is mounted in the body of the 'plane with which there is connected a bypass pipe connecting with the exhaust of the engine. A suitable valve controlled from the pilot's seat is connected with this pipe, so that when it is desired to produce a smoke cloud to envelop the 'plane, it is only necessary to open the valve and allow the engine exhaust to pass into the tank. The tank contains certain chemicals which when acted upon by the gases from the motor exhaust, produce smoke rapidly in great volume.

As the illustration shows, the diffusing heads consisting of conically-shaped drums with perforated faces on them, are placed around various parts of the airplane, under the wings and along the fuselage.

## THE MAGNETIC SURVEY VESSEL, "CARNEGIE."

The Magnetic Survey Vessel, *Carnegie*, arrived safely at her home port, Washington, D. C., a short time ago, where she was put out of commission during the period of the war. During her cruise from Buenos Aires, Argentina, round the Horn to Valparaiso, Chile, Callao, Peru, thence thru the Panama Canal to Newport News, she was in command of Dr. N. W. Edmonds and a number of other scientists of the Government staff.



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Not Only Can the Naval Destroyers and Other Vessels Throw a Dense Smoke Screen, but the Battle-plane as Well. This Recently Perfected Invention Causes the Exhaust Gases from the Engine to Pass into a Tank Containing Certain Chemicals, Which, When Thus Acted Upon, Produce a Dense Smoke in Great Quantities. The Smoke Is Distributed Thru Diffuser Heads About the Planes.

tremely difficult for, an enemy 'plane to "plant" a good shot on him. This is more apparent when it is considered that the 'plane would not simply have a dense cloud of smoke blown around it at one point in

the air, but it would in a few minutes produce a long trailing cloud of black smoke, and it would indeed be quite difficult for an aviator to tell at exactly what point in this cloud the enemy 'plane was.